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NOTES ON THE TERATOLOGY OF CERTAIN ANGIOSPERMS

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A few teratological observations have been made in the Experimental Garden of the Botanical Survey of India, Western Circle, Poona for *Ipomoea cairica* (Linn.) Sweet, *Zephyranthes carinata* Herb., *Z. rosea* Lindl. and *Rondeletia odorata* Jacq. which have been described in this paper.

Ipomoea cairica (Linn.) Sweet (The Railway creeper)

This well known plant belonging to family Convolvulaceae behaves very abnormally. The teratology of its stem and leaf has already been reported by Singh (1931) and Sinha (1933) respectively but in the present paper variations in its floral parts have been reported.

Besides a normal campanulate corolla as is the case in this species, some appendages or lobes, varying much in their size and shape, were observed fused unevenly to the corolla tube. The range of variations extended from a needle like structure to fully developed corolla segments with various intermediate stages, the extreme range resembling a smaller flower without style and stigma (Plate I, fig. B). An analysis of 100 flowers selected at random, so as to note the frequency of these abnormalities, broadly classified under 4 distinct types, is presented below (Plate I, fig. A).

Sl. No.	Condition of the flower	No. of flowers noted
1.	Normal flowers	9
2.	Flowers with needle-like appendages	37
3.	Flowers bearing bigger & broader lobes	36
4.	Flowers bearing fully developed cut open type of corolla	18

Published data reveals that the double forms are met within the genus *Ipomoea* Linn. especially so in a few species as *I. purpurea* Roth, *I. hederacea* Jacq. and *I. pandurata* G. F. W. Mey. Such variable structures as recorded above have been noted in this species for the first time.

For further observations, 4 cuttings were planted from the parent plants, 2 bearing more of normal flowers and the other two bearing more of abnormal flowers. On flowering it was observed that the one with more of normal flowers begot normal flowers only and the one with more of abnormal flowers begot only abnormal flowers. The experiment was repeated with the cuttings from these two stocks and the results obtained were identical with the previous observations.

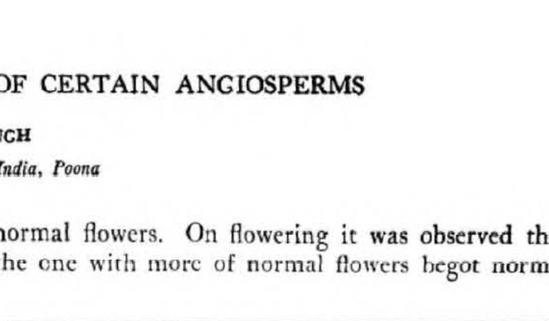


Plate I: *Ipomoea cairica* (Linn.) Sweet
Figs. A-B: A. Showing variations from a normal flower (extreme left) to a flower having cut open type of additional corollas (extreme right). B. Top and side views of the latter.

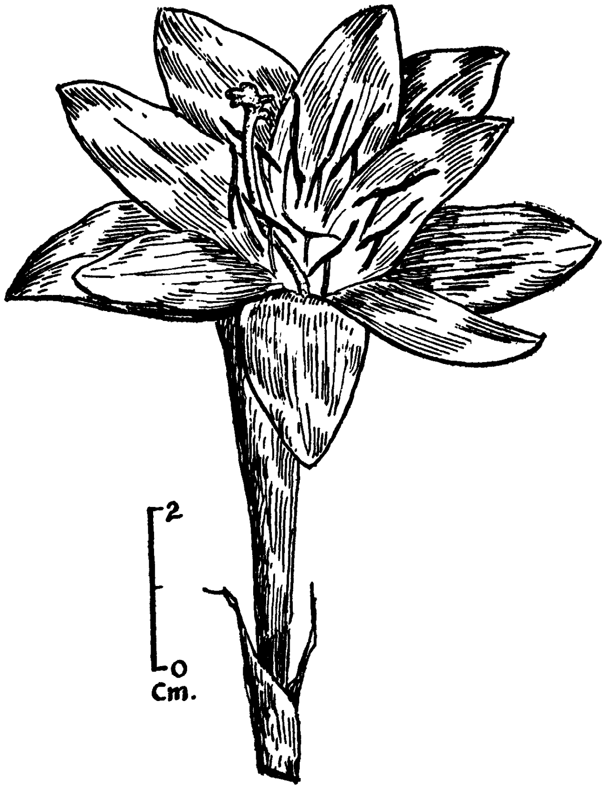
Zephyranthes carinata Herb. (The Zephyr flower or Fairy lily)

This is a moisture loving lily belonging to family Amaryllidaceae. Its normal flower is a trimerous one, consisting of 6 perianth lobes in two whorls of 3 each, 6 epiphyllous stamens and a tricarpellary pistil. Many abnormalities have been noticed in its floral parts, varying from a normal trimerous flower to a pentamerous flower (Text fig. 1). The variations include all sorts of combinations of perianth, androecium and gynoecium. Transverse sections of ovaries reveal variations from 3-5 locular condition, the number of locules always corresponding to the number of stigmatic lobes. A random sampling of 100 flowers revealed the following details:

Sl. No.	Condition of the flower	Floral variations	No. of flowers observed
1.	A normal typical trimerous flower	$\overparen{P_{3+3}A_6}\overline{G_{(3)}}$	33
2.	Abnormal flower	$\overparen{P_{3+3}A_6}\overline{G_{(4)}}$	5
3.	,,	$\overparen{P_{3+3}A_7}\overline{G_{(3)}}$	8
4.	,,	$\overparen{P_{3+3}A_7}\overline{G_{(4)}}$	5
5.	,,	$\overparen{P_{4+3}A_{6+1}}\overline{G_{(3)}}$ or $\overparen{P_{3+4}A_{6+1}}\overline{G_{(3)}}$	5
6.	,,	$\overparen{P_{3+4}A_7}\overline{G_{(3)}}$ or $\overparen{P_{4+3}A_7}\overline{G_{(3)}}$	11
7.	,,	$\overparen{P_{3+4}A_7}\overline{G_{(4)}}$ or $\overparen{P_{4+3}A_7}\overline{G_{(4)}}$	8
8.	,,	$\overparen{P_{3+4+1}A_{7+1}}\overline{G_{(4)}}$ or $\overparen{P_{4+3+1}A_{7+1}}\overline{G_{(4)}}$	5
9.	,,	$\overparen{P_{4+4}A_{7+1}}\overline{G_{(4)}}$	4
10.	,,	$\overparen{P_{3+3+1+1}A_8}\overline{G_{(4)}}$	3
11.	A typical tetramerous flower	$\overparen{P_{4+4}A_8}\overline{G_{(4)}}$	9
12.	Abnormal flower	$\overparen{P_{3+3}A_6}\overline{G_{(5)}}$	2
13.	A typical pentamerous flower	$\overparen{P_{5+5}A_{10}}\overline{G_{(5)}}$	2

Zephyranthes rosea Lindl. (Fairy lily)

This species is comparatively a much smaller plant with smaller flowers than *Z. carinata* Herb. Here again the flower is trimerous. Similar variations as indicated above under *Z. carinata* Herb. have been noticed varying from a trimerous to a tetramerous condition.



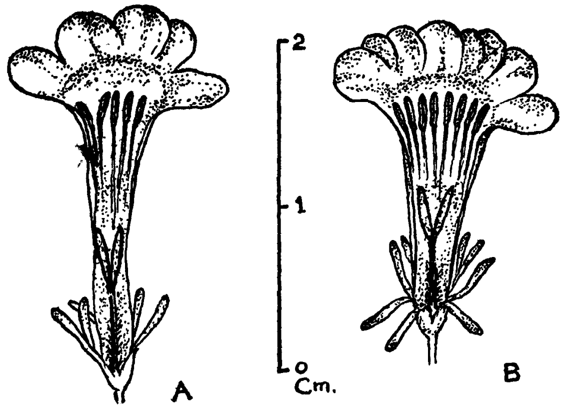
Text fig. 1: *Zephyranthes carinata* Herb. showing a typical pentamerous flower.

Rondeletia odorata Jacq. (Sweet smelling Rondeletia)

A normal flower of this species of the family Rubiaceae has been described by Bor & Raizada (1954) as having corolla with a cylindric tube with 5-6 lobes, stamens as many as corolla lobes and a bicarpellary pistil. But in the samples observed, the number of corolla lobes vary from 5-8 and correspondingly the sepal and stamen numbers also vary (Text fig. 2). 100 flowers were examined and the results are given below:

Sl. No.	Variation in sepals, petals and stamens	Flowers observed in each category
1.	$K_{(5)}\overparen{C_{(5)}A_5}$	5
2.	$K_{(6)}\overparen{C_{(6)}A_6}$	60
3.	$K_{(7)}\overparen{C_{(7)}A_7}$	30
4.	$K_{(8)}\overparen{C_{(8)}A_8}$	5

Besides these variations in 5-10% of the flowers, the stigma was found to be trifid irrespective of the number of lobes of calyx, corolla and stamens. In all such cases, the ovary is also found to be trilocular. More than two carpellary condition has been reported in many other genera of Rubiaceae like *Fergusonia* Hook. f., *Anotis* DC. & *Adenosacme* Wall., etc. Singh & Kalyanasundaram (1953) have reported 2-4 carpellary condition in species of *Ixora* Linn., *Mussaenda* Burm. ex Linn. and *Oldenlandia* Linn.



Text fig. 2: *Rondeletia odorata* Jacq. showing cut open flowers of the two extreme ranges of (A) 5-lobed and (B) 8-lobed corolla, with an equal number of sepal lobes and stamens respectively.

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REFERENCES

Bor, N. L. and M. B. Raizada. *Some Beautiful Indian Climbers and Shrubs*. Bombay, 1954.

Singh, T. C. N. On the teratology of certain Indian Plants. *J. Indian bot. Soc.* 10 : 134, 1931.

——and S. Kalyanasundaram. The occurrence of tricarpellary gynoecia in certain genera of Rubiaceae. *Ibid.* 32 : 64, 1953.

Sinha, B. N. A note on the variation of leaf in Railway creeper. *Ibid.* 12 : 48, 1933.